WILSON, J.G., editor; EYDUS, L.Kh. [translator]; GUROV, K.P., redaktor; NIKIFOROVA, A.N., tekhnicheskiy redaktor

[Progress in cosmic ray physics. Translated from the English] Fizika kosmicheskikh luchei; sovremennye dostizheniia. Sostavleno gruppoi avtorov, pod red. Dzh.Vil'sona. Perevod s angliiskogo L.Kh.Eidusa. Moskva, Izd-vo inostrannoi lit-ry, Vol.2. 1956. 279 p. (MIRA 9:11)
(Cosmic rays)

LOBACHEVSKIY, Nikolay Ivanovich, akademik; ALEKSANDROV, P.S., akademik, redaktor; DELONE, B.N., redaktor; RASHEVSKIY, P.K., redaktor; GUROV, K.P., redaktor izdatel'stva; KISELEVA, A.A., tekhnicheskiy redaktor

[Selected works on geometry] Izbrannye trudy po geometrii. Red. P.S.Aleksandrova, i dr. Moskva, Izd-vo Akademii nauk SSSR, 1956. 595 p. (MLRA 9:11)

1. Chlen-korrespondent AN SSSR (for Delone)
(Geometry)

VAVILOV, S.I., akademik; KUZNETSOV, I.V., otvetstvennyy redaktor; GUROV, K.P., redaktor izdatel'stva; AUZAN, N.P., tekhnicheskiy redaktor

[Collected works] Sobranie sochinenii. Moskva, Izd-vo, Akademii nauk SSSR. Vol.3. [Works on philosophy and the history of the natural sciences] Raboty po filosofii i istorii estestvoznaniia. 1956. 870 p. (Science)

BOROVSKIY, Igor' Borisovich; GUROV, K.P., redaktor; NOSYREVA, I.A., redaktor izdatel'stva; MULIN, Yu.V., tekhnicheskiy redaktor

[Physical foundations of x-ray research] Fizicheskie osnovy rentgenospektral'nykh issledovanii. [Moskva] Izd-vo Moskovskogo univ., 1956. 462 p. (MLRA 9:8)
(X rays)

OKHOTSIMSKIY, D.Ye.; KONDRASHEVA, I.L.; VLASOVA, Z.P.; KAZAKOVA, R.K.; PETROVSKIY, I.G., akademik, otvetstvennyy redaktor; NIKOL'SKIY, S.M., professor redaktor; GUROV, K.P., redaktor; VANYUSHENKOVA, V.V., tekhnicheskiy redaktor; MAKUNI, Ye.V., tekhnicheskiy redaktor.

[Calculation of a point explosion and resistance]Raschet tochechnogo vzryva s uchetom protivodavleniia. Moskva, Izd-vo Akademii nauk SSSR, 1957. 65 p. (Akademiia nauk SSSR.Matematicheskii institut. Trudy, vol. 50) (MLRA 10:3)

(Shock waves)

YUS'KOVICH, Vasiliy Fomich; REZNIKOV, Leonid Isaakovich; YENOKHOVICH, Anatoliy Sergeyevich; [illegible] redaktor; GUS'KOV, G.G., redaktor; MUKHINA, T.N., tekhnicheskiy redaktor

[Applied science training in a physics course; a teacher's manual] Politekhnicheskoe obuchenie v prepodavanii fiziki; posobie dlia uchitelei. Izd. 3-e, perer. i dop. Moskva, Izd-vo Akad. pedagog. nauk RSFSR, 1957. 327 p. (MLRA 10:8)
(Physics--Study and teaching)

LEVANTOVSKIY, Vladimir Isaakovich; LESHKOVTSEV, Vladimir Alekseyevich; RAKHLIN, Il'ya Yevgen'yevich; GUROV, K.P., red.; SAMSONENKO, L.V., red.; BRUDNO, K.F., tekhn.red.

[Soviet rocket investigates the universe] Sovetskaia raketa issleduet kosmos. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1959. 127 p. (MIRA 12:7)
(Space flight)

YAKOVLEV, K.P.; LUNTS, G.L.; YANPOL'SKIY, A.R.; BRONSHTEYN, I.N., red.; GUROV, K.P., red.; KUZNETSOVA, Ye.B., red.; AKHLAMOV, S.N., tekhn.red.

[Concise manual of physics and engineering] Kratkii fiziko-tekhnicheskii spravochnik. Moskva, Gos.izd-vo fiziko-matem. lit-ry. Vol.1. [Mathematics, physics] Matematika, fizika. 1960. 446 p. (MIRA 13:5)
(Mathematics--Handbooks, manuals, etc.)
(Physics--Handbooks, manuals, etc.)

IOFFE, Abram Fedorovich, akademik; GUROV, K.P., red.; KRYUCHKOVA, V.N., tekhn.red.

[Meetings with physicists; my recollections about foreign physicists] Vstrechi s fizikami; moi vospominaniia o zarubezhnykh fizikakh. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1960. 142 p. (MIRA 14:3)

(Physicists)

FISHER, Iosif Zalmanovich; GUROV, K.P., red.; YERMAKOVA, Ye.A., tekhn. red.

[Statistical theory of liquids] Statisticheskaia teoriia zhidkostei. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961. 280 p. (MIRA 14:9)
(Liquids)

ABRIKOSOV, Aleksey Alekseyevich; GOR'KOV, Lev Petrovich; DZYALOSHINSKIY, Igor' Yekhiyel'yevich; GUROV, K.P., red.; PLAKSHE, L.Yu., tekhn. red.

["Quantum field theory methods in statistical physics] Metody kvantovoi teorii polia v statisticheskoi fizike. Moskva, Fizmatgiz, 1962. 443 p. (MIRA 15:7)
(Quantum field theory)

YAVORSKIY, Boris Mikhaylovich; DETLAF, Andrey Antonovich; GUROV, K.P., red.; MURASHOVA, N.Ya., tekhn. red.

[Manual on physics; for engineers and university students] Spravochnik po fizike; dlia inzhenerov i studentov vuzov. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1963. 847 p. (MIRA 16:8)

(Physics)

SHAKHPARONOV, Mikhail Ivanovich. Prinimali uchastiye: KASIMOV, R.M.; AKHADOV, Ya.Yu.; VAKALOV, I.A.; BERIDZE, D.K.; GUROV, K.P., kand. fiz.-matem. nauk, red.; YERMAKOV, M.S., tekhn. red.

[Methods of studying the thermal motion of molecules and the structure of liquids] Metody issledovaniia teplovogo dvizheniia molekul i stroeniia zhidkostei. Moskva, Izd-vo Mosk. univ. 1963. 280 p. (MIRA 16:11)
(Dielectric constants) (Molecular structure)

ROZOV, S.V., prof.; RYZHENKO, I.M., kand. tekhn. nauk, retsenzent; GUROV, K.A., inzh., retsenzent; VYAZOVOY, M.I., inzh., retsenzent; KOZLOV, A.P., red.-izd-va; GORDEYEVA, L.P., tekhn. red.

[Course in mechanical drawing] Kurs cherchenilia. izd.ispr. Moskva, Mashgiz, 1963. 319 p. (MIRA 17:1)

SOV/137-58-7-15571

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 235 (USSR)

AUTHORS: Borovskiy, I. B., Gurov, K. P.

TITLE: On the Problem of the Role of Small Substitutional Admixtures in Alloys [K voprosu o roli malykh primesey zameshcheniya v splavakh (I)]

PERIODICAL: V sb.: Issled. po zharoprochn. splavam. Vol 2. Moscow, AN SSSR, 1957, pp 234-245

ABSTRACT: In order to explain the effect of small substitutional admixtures (A) on the physical properties of transition metals a qualitative theory of the formation of short-range order ("blocks") in the crystalline lattice of the base under the influence of excess charges of the atoms of the A was developed. Three premises are laid as its base: 1) the excess charge of the substitutional A causes a deformation of the electron spectrum in the metal, especially of the conductivity zone and, consequently, effects also a spatial redistribution of the density of conductivity electrons (E); 2) the E of the conductivity zone are free, therefore the Thomas-Fermi approximation is valid; 3) the adiabatic concept is valid because in the presence

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On the Problem of the Role of Small Substitutional Admixtures in Alloys

of a small A the lattice period undergoes only insignificant transformations. First, using the Thomas-Fermi method, the deformation of the spectrum of the conductivity E, the redistribution of the density of E, and the screening of the potential of the excess charge of A in the presence of one atom of A in an entire crystal are calculated. The distance R_0 at which the screening can be considered to be practically complete has the order of the lattice period. Next, the E of the incomplete shell of transition metals is examined. The level zone of these E overlaps the conductivity zone, so that the deformation of the levels examined above concerns both zones. A comparative portion of screening E in each zone is proportional to the density of the levels at the Fermi level in the respective zone. At the same time each atomic frame situated closer than R_0 receives an additional negative bound charge. Such atomic frames interreact with the excess charge of A (a "block" forms with dimensions $\sim R_0$, inside which the mobility of the atoms is impeded). The results obtained extend to the case of the final concentration of A. At the same time A is considered to be distributed uniformly, a crystal is broken into cells in the center of which an atom of A is situated. For this case, the solution is given by a somewhat different R_0 which depends rather sharply on the concentration of the A, c (in atom %): $R_0 \approx (c)^{1/3}$. The optimum concentration of A is determined by the following considerations: it is

On the Problem of the Role of Small Substitutional Admixtures in Alloys

necessary for the majority of the atoms of the base to be in "blocks", but the potentials of A should not overlap, because in that case a long-range order is formed. Thus $1/[\sigma\, 4\pi/3(2R_o)^3] \leq C < 1/[\sigma\, 4\pi/3(R_o)^3]$ where σ is the density of the nodes of the crystalline lattice. The insufficient strictness of the theoretical investigation consists of the fact that the Thomas-Fermi method which is applicable to free E with an energy close to the Fermi level, is applied to the E of an incomplete shell.

1. Alloys--Physical properties 2. Alloys--Transformations
3. Alloys--Lattices

G.L.

Card 3/3

AUTHOR: Borovskiy, I.B. and Gurov, K.P. 131

TITLE: On the theory of solid solutions of transition metals. (K teorii tverdykh rastvorov na osnove perekhodnykh metallov)

PERIODICAL: "Fizika Metallov i Metallovedenie," (Physics of Metals and Metallurgy), 1957, Vol.IV, No.1 (10), pp.187-189 (U.S.S.R.)

ABSTRACT: On the basis of published and to be published results by the authors of this paper, relating to the study of the electron energy spectrum of solid solutions and the mobility of atoms in solid solutions, it was established that small concentrations have an important influence on the properties, and this influence has characteristic features in cases in which a transition element metal forms the basic component of the solid solution. The results can be summarised thus: an appreciable change is observed in the wave length and the shape of the K- and L- absorption wedges, the K_{β_2} and K_{β_5} lines of emission of the X-ray spectrum of transition elements in the solid solutions. The highest effect is achieved in the case of concentration of admixtures below 0.8 at.% and the effect ceases for concentrations of 2 at.% and above. A noticeable "thawing" of the fine structure of the absorption edge is observed for lead with increasing temperature; at 200 °C the entire fine structure practically ceases to exist, however, in the case of a 0.5 at.% of tin content the fine

On the theory of solid solutions based on transition element metals, (Cont.)

structure of the absorption boundary of the lead remains conserved at 200 °C. On increasing the tin concentration this effect ceases and the results will again be obtained which are characteristic for pure lead. The curve of the coefficient of self-diffusion of α-iron has two minima and two maxima and then changes into an asymptotic curve which is characteristic for transition metals; the curves are analogous also for other transition metals. These experimental observations and also analysis of data given in the literature led the authors to developing a conception on the formation of "blocks" inside solid solutions with a low content of one of the components. The theoretical results thus deduced may play an important role in the physical theory of alloying, and a detailed description of the experimental data and their interpretation in accordance with the conceptions developed by the authors will be the subject of later papers.
6 references, 5 of which are Russian.

Institute of Metallurgy
imeni A.A. Baykov.

Recd, October 30, 1956.

GUROV, K. P. and BOROVSKIY, I. B. (IMET AN SSSR)

"On the Theory ofXESolid Solutions Based on Transitional Metals"

Materials of the 2nd All-Union Conference on X-ray Spectroscopy; Moscow, January 31 February 4, 1957 (Materialy II Vsesoyuznogo soveshchaniya po rentgenovskoy spektroskopii; Moskva, 31 yanvarya - fevralya 1957 g.)

Izvestiya Akademii nauk SSSR, Seriya fizicheskaya 1957, Vol 21, Nr. 10, pp 1341 - 1342 (USSR)

AUTHOR: Borovskiy, I.B., Gurov, K.P., Ditsman, S.A., Batyrev, V.A., Lobanova, N.D. 48-10-11/20

TITLE: X-Ray Spectral Investigations of Solid Solutions (Rentgenospektral'nyye issledovaniya tverdykh rastvorov)

PERIODICAL: Izvestiya AN SSSR Seriya Fizicheskaya, 1957, Vol. 21, Nr 10, pp. 1401-1411 (USSR)

ABSTRACT: On the basis of experimental investigations and the theoretical analysis of the problem of diluted solid solutions the authors draw the following conclusions: 1.) In diluted solid solutions near the admixture atoms with a negative excess charge "atomic blocks" are formed with an effective radius of 10^{-7} cm (if the atoms of the basis are atoms of the elements of transition groups). Within the boundaries of these blocks an additional play of forces develops. The potential of these forces has the character of a short-acting (cut off) potential. 2.) The influence exercised by these "blocks" in an energetical electron spectrum manifests itself most in-so-far as there is no interaction between the admixture atoms. 3.) The additional binding which develops and which is of polar character, is conserved within the limits of a large interval of concentration modification for solid solutions of the

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Cr-Mo-system (although now there are no blocks and binding is weaker). On the Cr-side this interval of "constant additional binding" is conserved within range of 2 ÷ 30%$_{at}$ molybdenum. On the molybdenum side - 3 ÷ 20%$_{at}$ Cr. 4.) If Mo or Cr are admixture atoms, each of them has a negative excess charge in relation to the basic atoms (Cr and Mo respectively). 6.) In the interval of Cr-concentrations of 38 ÷ 70%$_{at}$ in its solid solutions with Mo, Cr has a positive and Mo has a negative excess charge (compared to their charge in pure metals). There are 6 figures, 4 tables, and 12 references, 7 of which are Slavic.

ASSOCIATION: Laboratory for Physical Methods of Investigation at the Institute for Metallurgy imeni A.A.Baykov AS USSR (Laboratoriya fizicheskikh metodov issledovaniya instituta metallurgii im. A.A.Baykova Akademii nauk SSSR)

AVAILABLE: Library of Congress

KRIVOGLAZ, Mikhail Aleksandrovich; SMIRNOV, Adrian Anatol'yevich; GUROV, K.P., red.; MURASHOVA, N.Ya., tekhn.red.

[Theory of ordered alloys] Teoriia uporiadochivaiushchikhsia splavov. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1958. 388 p. (Alloys) (MIRA 12:3)

GUROV, K.P.

Equilibrium number of vacant points (holes) in metals. Trudy Inst.met. no.3:122-127 '58. (MIRA 12:3)
(Crystal lattice)
(Metal crystals)

GUROV, K.P.

Theory on vacancy self-diffusion in metals. Trudy Inst.met. no.3:128-135 '58. (MIRA 12:3)
(Crystal lattices) (Diffusion)

18(7),24(7)

AUTHOR: Gurov,K.P.

SOV/155-58-3-28/37

TITLE: On the Question of the Influence of Alloying Mixtures to the Electron Spectrum of Transition Metals (K voprosu o vliyanii legiruyushchey primesi na elektronnyy spektra perekhodnykh metellov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 3, pp 152-158 (USSR)

ABSTRACT: In connection with a one-electronic theory of metals the author founds theoretically those model conceptions developed by Friedell [Ref 6], Gurov [Ref 1,7] and others in order to explain the influence of weakly concentrated alloying mixtures to the physical properties of the metal. The author thanks N.N. Bogolyubov, I.B.Borovskiy, V.V.Tolmachev, S.V.Tyablikov, and V.V.Shmidt for discussions.
There are 10 references, 4 of which are Soviet, 3 American, 2 German, and 1 English.

ASSOCIATION: Institut metallurgii imeni A.A.Baykova (Institute of Metallurgy imeni A.A.Baykov)

SUBMITTED: March 24, 1958

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24(8),18(7)
AUTHOR: Gurov,K.P. SOV/155-58-3-29/37

TITLE: On the Relation Between the Activation Energy of the Autodiffusion and the Debye Characteristic Temperature (O sootnoshenii mezhdu energiyey aktivatsii samodiffuzii i debayevskoy kharakteristicheskoy temperaturoy)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 3, pp 159-164 (USSR)

ABSTRACT: The author uses results of Brenig [Ref 2] and derives the following approximate relation between the activation energy of the autodiffusion Q and the Debye characteristic temperature Θ_D:

$$Q = \gamma \frac{k^2 N_A M_H}{2.016\,\pi^2} A a^2 \Theta_D^2 ,$$

where the relation $M = \frac{M_H A}{1.008}$ is considered. Here A is the atomic weight of the considered element, M_H is the mass of the hydrogen atom, M is the atomic mass, k is the Boltzman-constant, N is the Avogadro-number, a is the lattice constant, γ is the structure factor. The formula shows a good agreement with the experimental

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On the Relation Between the Activation Energy of the Autodiffusion and the Debye Characteristic Temperature SOV/155-58-3-29/37

results of the Ts NII Cher.Met.(Central Scientific Research Institute of Black Metallurgy) - P.L.Gruvin, G.V.Kurdyumov, A.D. Tyutyunnik, R.N.Entin. The author mentions V.Z.Bugakov, A.A. Smirnova, and M.A.Krivoglaz. The author thanks Yu.G.Miller for the comparison of the results, and V.A.Il'ina for experimental values of the Θ_D.

There are 3 tables, and 5 references, 4 of which are Soviet, and 1 German.

ASSOCIATION: Institut metallurgii imeni A.A.Baykova (Institute of Metallurgy imeni A.A.Baykov)

SUBMITTED: March 24, 1958

Card 2/2

BOROVSKIY, I.B.; GUROV, K.P.

Theory of diluted solid solutions. Issl. po zharopr. splav. 3:264-272 '58. (MIRA 11:11)

(Solutions, Solid) (Crystal lattices)

Gurov, K. P.

20-2-20/60

AUTHORS: Borovskiy, I. B. , Gurov, K. P. , Miller, Yu. G.

TITLE: The Influence of Chromium, Molybdenum, and Tungsten on the Autodiffusion of Iron in α-Solid Diluted Solutions (Vliyaniya khroma, molibdena i vol'frama na samodiffuziyu zheleza v razbavlennykh α-tverdykh rastvorakh)

PERIODICAL: Doklady AN SSSR, 1958, Vol. 118, Nr 2, pp. 280 - 283 (USSR)

ABSTRACT: Based on their investigation (reference 1) of the energy spectrum diluted solid solutions and based also on the analysis of data by other authors (reference 2) the authors developed model-impressions about the special character of the electron spectrum of such systems and about the existence of additional local forces of the bindings. These investigations referred to the case that a transition-metal, the atoms of which have "defective" (n-1)d- and (n-1)f-electron shells, is used as the base of the diluted solid solution. To study the influence of Cr, Mo and W on the autodiffusion of iron, for each system 6 alloys with a percentage of $\sim$ 0,1 to 4

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The Influence of Chromium, Molybdenum, and Tungsten on the Autodiffusion of Iron in α -Solid Diluted Solutions

atom-percent of the second component were produced. The base for producing these alloys was a specially purified electrolytic iron. Form these alloys plane parallel test-pieces, which had a diameter of 15 mm and were 6 mm thick, were turned out. Then a thin layer of radioactive Fe^{59} was laid on these test-pieces by electrolytic way. The coefficients of autodiffusion of iron in the alloys were ascertained by one of the methods of the plane parallel distance of layers. The diagrams illustrate the curves of the dependence of the coefficients for autodiffusion of iron on the rate of concentration of Cr, Mo and W. In all the three cases the coefficient of autodiffusion initially decreases, then passes a minimum in the case of concentrations of an order of $\sim$0,1 atom-per cent, afterwards increases, reaches a maximum at concentrations of $\sim$1 atom-per cent and then changes only insignificantly. There is an optimum concentration of admixture , in the case of which the regulating effect of the ingots is a maximum , and a superior limit of concentrations, where ingots can exist. If the concentration of the admixture increases, the number of ingots increases, too, and the

The Influence of Chromium, Molybdenum, and Tungsten on the Autodiffusion of Iron in α-Solid Diluted Solutions

coefficient of autodiffusion decreases according to this. At that concentration of the admixture, which corresponds with the "tight packing" of the ingots, the coefficient of autodiffusion is a minimum. The model-impressions, which are discussed here, have been workd out for the absolute temperature of zero and for an ideal structure of a crystal. The factor of temperature distorts the phenomenon, but according to the results, which were shown here, the curve of the coefficient of autodiffusion agrees with the expected curve. The effects of autodiffusion at the boundaries of the grains distort the curves of concentration, which were obtained, only insignificantly. There are 3 figures, and 8 references, 4 of which are Slavic.

ASSOCIATION: Institute for Metallurgy imeni A. A. Baykov AN USSR (Institut po metallurgii im. A. A. Baykova Akademii nauk SSSR)
PRESENTED: August 7, 1957, by G. V. Kurdyumov, Academician
SUBMITTED: July 19, 1957
AVAILABLE: Library of Congress
Card 3/3

18(4)

PHASE I BOOK EXPLOITATION SOV/1896

Akademiya nauk SSSR. Institut metallurgii

Metallurgiya, metallovedeniye, fiziko-khimicheskiye metody issledovaniya (Metallurgy, Study of Metals, and Physicochemical Methods of Investigation) Moscow, Izd-vo AN [illegible], 306 p. (Series: Its: Trudy, vyp. 3) Errata slip inserted. 3,000 copies printed.

Resp. Ed.: I.P. Bardin, Academician; Ed. of Publishing House: A.N. Chernov; Tech. Ed.: I.F. Kuzmin.

PURPOSE: This book is of interest to researchers in metallurgy, as well as to the technical personnel of the metallurgical industry.

COVERAGE: This volume of the Trudy (Transactions) of the Institut metallurgii imeni A.A. Baykova (Metallurgical Institute im. A.A. Baykov) contains 31 studies on metallurgy, individual metals and alloys, and physicochemical methods of investigation. Some of the studies pertain to the reduction of titanomagnetites, the viscosity and other characteristics of blast furnace slag, dislocation in metals, cracking of metals due to corrosion, simultaneous

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solubility of metals at various temperatures, apparatus for measuring electrical resistance and for determining the melting point of alloys and metals, optical spectral analysis, quantitative determinations by the sublimation method, and aging of alloys. Each study is accompanied by references.

TABLE OF CONTENTS:

Metallurgy, Study of Metals (Cont.) SOV/1896

Card 3/6

GOLUBEV, Il'ya Fedorovich; GUROV, K.P., red.; GAVRILOV, S.S., tekhn.red.

[Viscosity of gases and gas mixtures; reference manual]
Viazkost' gazov i gazovykh smesei; spravochnoe rukovodstvo.
Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1959. 375 p.
(MIRA 12:8)

(Viscosity) (Gases)

Gurov, K.P.

18(7) PHASE I BOOK EXPLOITATION SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Ageyev; Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. M. Pavlov, and I. P. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties of specific materials. Various phenomena occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

Studies (Cont.) SOV/3355

Studies (Cont.) SOV/3355

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24,7000
~~18(7), 24(7)~~

SOV/155-59-1-27/30

AUTHORS: Gurov, K.P., and Miller, Yu.G.

TITLE: On the Dependence of Concentration of the Coefficient of Self-Diffusion in Diluted Hard Solutions on the Base of Transition Metals

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1959, Nr 1, pp 173-178 (USSR)

ABSTRACT: The authors join the paper of I.B. Borovskiy [Ref 1] in which it is proved that the variation of the coefficient of the self-diffusion in binary hard solutions on the base of α-iron has a distinct non-monotone character for small concentrations. In [Ref 1,5,6,7,8] these phenomena are explained by the electronic structure and the forces of interatomic bindings. In the present paper the authors state that the mobility of the atoms is different in three domains [Ref 9]. Every domain considered as a macro-volume has an own coefficient D_i ($i = 1,2,3$) of self-diffusion. Now the experimentally measured coefficient is defined as the averaged coefficient of the self-diffusion in a polyphase system :

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On the Dependence of Concentration of the Coefficient of Self-Diffusion in Diluted Hard Solutions on the Base of Transition Metals

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(1) $$D = A_1D_1 + A_2D_2 + A_3D_3$$

The weight functions A_i are determined from geometrical considerations. The theoretical D-curve constructed in this manner shows a very good agreement with the experiment in the region of small concentrations.

The authors mention A.A. Smirnov, and M.A. Krivoglaz.

There are 11 references, 6 of which are Soviet, 1 English, 2 Swedish, and 2 American.

ASSOCIATION: Institut metallurgii imeni A.A. Baykova (Institute of Metallurgy imeni A.A. Baykov)

SUBMITTED: January 23, 1959

Card 2/2

24(6), 24(2), 18(7)

SOV/126-7-2-10/39

AUTHORS: Borovskiy, I. B. and Gurov, K. P.

TITLE: Investigation of the Electron Spectra of Dilute Solid Solutions (Issledovaniye elektronnogo spektra razbavlennykh tverdykh rastvorov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 2, pp 225-234 (USSR)

ABSTRACT: The present paper describes certain conclusions on the electron energy spectra of dilute solid solutions deduced from the fine structure of X-ray spectra of atoms of the alloy base, studied as a function of concentration of the impurity and as a function of temperature. X-ray emission spectra were obtained by means of a bent-crystal spectrograph. The $K_{\alpha_{12}}$, K_{β_1}, K_{β_5} emission lines of chromium and the K_{β_2}, K_{B_1} and L_{β_2} emission lines of molybdenum were recorded. The authors obtained also the K and the L_{III} absorption spectra of chromium and molybdenum. All these spectra were obtained using pure metallic chromium (99.5-99.98% purity) and alloys of chromium containing 0.1, 0.7 and

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Investigation of the Electron Spectra of Dilute Solid Solutions

1% of Mo. The main results of the X-ray spectral measurements are given in Tables 1 and 2 and in Fig 1. Using these results, the authors suggested a new model of a dilute solid solution. To check the correctness of this model the authors studied the effect of concentration of impurities and of temperature on the mobility of atoms in α-type solid solutions with body-centred cubic lattice. For this purpose the L_{III} absorption spectra of lead in Pb-Sn alloys were obtained between -190 and +300°C. These L_{III} absorption spectra were obtained for pure lead and lead alloys containing 0.2, 0.5, 2.0 and 10% of Sn; a bent-crystal spectrograph was used and transmission patterns were obtained. The X-ray absorption spectra of lead are shown in Fig 3 and the wavelengths of the maxima near the L_{III}-edge are listed in Table 3. The authors draw the following conclusions from their experimental data: 1) A small amount of impurity alters the whole electron

 spectrum of the alloy, if the base of the alloy is a

transition element or an element with virtually unfilled inner electron levels.
2) The energy distribution of the outer (valence) electron levels and of some inner electron levels is altered on formation of interatomic bonds in alloys.
3) Molybdenum, as an impurity, is negatively charged.
4) Thermal vibrations affect not only the processes of scattering of electrons but also the whole electron energy spectrum and the charge of the base-metal atoms.
5) Presence of small impurities alters the mobility of the base-metal atoms and at a certain impurity concentration the mobility of atoms of transition elements passes through a minimum; the temperature dependence of mobility depends on the sign of the excess charge of the impurity atoms.
These conclusions and the analysis of published material (Refs 5,6) were used as the basis of a model which describes formation of "atomic blocks" in dilute solid solutions. An impurity, when introduced into a metal, loses its outer electrons to the conduction band of the base-metal and consequently acquires a charge which, in

Investigation of the Electron Spectra of Dilute Solid Solutions

general, is different from the charge of the base-metal atoms. The impurity charge may be regarded as a perturbation producing a deformation of the electron energy bands of the base-metal. This causes a spatial re-distribution of electrons in incompletely filled bands and alters somewhat the effective charge of the base metal atoms. The latter effect may be regarded as an appearance of induced impurities whose charges are opposite in sign to the impurity charge. An additional coupling appears between the original and induced impurities: stable blocks of short-range order are formed. Such blocks exist until a complete overlapping of the spheres of action of the perturbing potentials due to impurities occurs, i.e. there is an upper limit of impurity concentration above which such blocks are no longer formed. There are 5 figures, 3 tables and 11 references, 6 of which are Soviet, 4 English and 1 German.

ASSOCIATION: Institut metallurgii imeni A. A. Baykova.
(Institute of Metallurgy imeni A. A. Baykov)

SUBMITTED: August 21, 1957

24 (7), 18 (7)

AUTHORS: Borovskiy, I. B., Gurov, K. P. SOV/48-23-5-30/31

TITLE: On the Evaluation of the Influence of Impurities on the X-ray Emission Spectrum of Diluted Solid Solutions on the Basis of Transition Metals (Ob otsenke vliyaniya primesey na rentgenovskiye emissionnyye spektry razbavlennykh tverdykh rastvorov na osnove perekhodnykh metallov)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 5, pp 660 - 665 (USSR)

ABSTRACT: A model is introduced by the authors of the present paper, according to which the impurities in the metal exhibit a positive and a negative charge. This disturbing potential causes a deformation of the electron shell of the basic metal atoms. In transition metals this effect causes defective d- or f-shells. The electron flowing over is explained with Fermi levels and a model is thus developed concerning the local deformation of the electron spectrum of the system. Concerning the theoretical basis of this model reference is made to paper (Ref 3). The principal results obtained from the investigation under review are then summarized. The single-electron energy spectrum and the interaction of an ideal crystal are first developed. The

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On the Evaluation of the Influence of Impurities on the X-ray Emission Spectrum of Diluted Solid Solutions on the Basis of Transition Metals

SOV/48-23-5-30/31

formulas thus obtained are developed for the case of local potential disturbances. Formula (7) is developed in this connection for the displacement of the electron energy level. On the strength of these formulas the influence exerted by impurities on the X-ray spectrum of α iron is then evaluated. An evaluation then follows of the mean induced charge upon an atom shell of the basic metal, and next, the mean change of an atom charge is developed in general and for iron. The formula is given for the effective radius of the charge. The empirical method of evaluation is then dealt with and some values concerning α iron are given. Finally, the relationship with the Moseley law is mentioned and some formulas are derived. There are 17 references, 8 of which are Soviet.

ASSOCIATION: Institut metallurgii Akademii nauk SSSR (Institute of Metallurgy of the Academy of Sciences, USSR)

Card 2/2

24(4)

AUTHORS: Borovskiy, I. B., Gurov, K. P. SOV/56-36-4-35/70

TITLE: On the Influence of Impurities on the X-Ray Spectra of Transition Metals (O vliyanii primesey na rentgenovskiye spektry perekhodnykh metallov)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4, pp 1203-1206 (USSR)

ABSTRACT: As investigations carried out in recent years of solid solutions on transition metals showed, impurities in low concentrations (0.01 - 0.1 atom%) exercise a considerable influence on certain physical properties of such solutions (as e. g. modification of the parameters of emission and absorption X-ray spectra, variation of the optical constant, of the self-diffusion coefficients, of the linear coefficient of expansion, etc). Already in previous papers (Refs 1, 2) the authors investigated similarity models of the physical mechanism of the effect produced by such impurities upon the electron energy spectra and the interatomic binding forces in these metals. They carried out their investigations on the basis of empirical and theoretical results. In the present paper the applicability of the representations developed for

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On the Influence of Impurities on the X-Ray Spectra of Transition Metals

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a qualitative estimation of the wave length variation of the lines in X-ray emission spectra is investigated. The model representations are discussed in the introduction. On the basis of these representations and of that of Moseley's law, the influence of impurities is estimated. For the purpose of illustrating the method, the linear shift in the emission X-ray spectrum of iron in solid and diluted solutions (α-phase) is investigated and compared with the spectrum of pure α-iron. For an impurity concentration of 0.1 atom% $|\Delta Ze| \approx 10^{-2}|Ze|$ holds for the variation of the effective charge. By means of Moseley's law the shifting of lines is investigated; it holds that $\Delta\nu/\nu = -2\Delta\sigma/(Z_{nuc}-\sigma)$ (Z_{nuc} = absolute nuclear charge, σ = shielding constant). For $\Delta\sigma$ it holds that $\Delta\sigma = B_{3d}\Delta z_{3d}$ (z_{3d} = charge of the 3d-electron shell); according to the Sommerfeld formula $B_{3d} = a_n/a$ (a_n = radius of that electron shell to which the s corresponds, a = atomic radius). For the shifting of the K_{β_1} - line (1s - 3p transition) one obtains with $a_{3p} = 0.2.10^{-8}$ cm and

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$a = 0.4 \cdot 10^{-8}$ cm $B_{3d} \approx 10^{-1}$; $|\Delta\sigma| = B_{3d}|\Delta Z_{3d}| \approx 10^{-3}$

and with $(Z_{n_{uc}} - \sigma) \approx 20$: $|\Delta\nu/\nu| = |-2\Delta\sigma/(Z_{n_{uc}} - \sigma)| \approx 10^{-4}$.

Experimental data give $\Delta\nu \approx 0.7$ ev at $\nu = 7 \cdot 10^3$ ev, i. e. the same order of magnitude. There are 11 references, 8 of which are Soviet.

ASSOCIATION: Institut metallurgii Akademii nauk SSSR (Metallurgy Institute of the Academy of Sciences, USSR)

SUBMITTED: October 10, 1958

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GUROV, K.P.

PHASE I BOOK EXPLOITATION SOV/4557

Akademiya nauk SSSR. Institut metallurgii

Metallurgiya, metallovedeniye, fiziko-khimicheskiye metody issledovaniya (Physicochemical Research Methods in Metallurgy and Metal Science) Moscow, Izd-vo AN SSSR, 1960. 151 p. (Series: Its: Trudy, vyp. 6) 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova.

General Ed.: I.P. Bardin, Academician (Deceased); Resp. Eds. for this Vol.: I.B. Borovskiy, Doctor of Physics and Mathematics, and K.P. Gurov, Candidate of Physics and Mathematics; Ed. of Publishing House: K.P. Gurov, Candidate of Physics and Mathematics; Tech. Ed.: O.M. Gus'kova.

PURPOSE: This collection of articles is intended for researchers in metallurgy and metal science and for scientists engaged in developing physicochemical methods of analysis.

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COVERAGE: The collection contains 21 studies by members of the Laboratoriya fizicheskikh metodov issledovaniya (Laboratory of Physical Analysis Methods) of the Institut metallurgii imeni A.A. Baykova AN SSSR (Metallurgical Institute imeni A.A. Baykov, Academy of Sciences USSR), published in 1958-59. The articles are concerned with the experimental and theoretical study of physical characteristics of diluted solid solutions and compounds with special properties. The purpose of these studies is to establish the interrelation between the electronic structure of atoms and the structural characteristics of metallic compounds of systems. Some of the articles contain results obtained by applying new physical analysis methods, including the x-ray spectrum method (for analyzing the composition of microvolumes of alloys) and the microfocused x-ray spectroscopic method. Other articles describe the new RSASh-2 and RSASh-ZD apparatus used in the analysis. The first article, by I.B. Borovskiy, deals with the accomplishments and trends of Soviet research in metal science and metallurgy. References accompany each article. Also included is a bibliography containing 383 works by members of the Metallurgical Institute imeni A.A. Baykov. This bibliography was first published in 1956.

TABLE OF CONTENTS:

GUROV, K.P., kand.fiz.-matem.nauk

Effect of impurities on equilibrium characteristcs of metals.
Trudy Inst. met no.6:9-19 '60. (MIRA 13:8)
(Crystal lattices) (Phase rule and equilibrium)

850 35

S/126/60/010/004/002/023
E201/E491

24.7000 2209, 1138, 1136 only

AUTHORS: Gurov, K.P. and Borovskiy, I.B.

TITLE: A Theory of Dilute Solid Solutions

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.4, pp.513-519

TEXT: The curves showing a physical property plotted against the amount of a second component (impurity) in an alloy have marked extrema in dilute alloys of transition metals or metals with unfilled inner electron shells. Such extrema were observed for the self-diffusion coefficient (Ref.1), the linear thermal expansion coefficient (Ref.2), Young's modulus and internal-friction characteristics (Ref.3), the rate of disappearance of the fine structure in the X-ray absorption spectra with increase of temperature (Ref.4), the electrical conductivity (Ref.5), the optical constants (Ref.6) and other properties. The present paper extends authors' earlier work (Ref.7) on dilute alloys. Their proposed theory is based on the following considerations. An impurity introduced into a metal loses its outer (valence) electrons which join the conduction electrons of the matrix. Impurity ions formed in this way have perturbing potentials with a finite radius

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A Theory of Dilute Solid Solutions

of action (amounting to several coordination spheres) because of the screening effect of the conduction electrons. Polarization produced by the impurity ions deforms electron shells of the matrix atom cores. Near an impurity the effective charges of the matrix atom cores are altered. This can be regarded as appearance of excess charges which are opposite in sign to the charges of the impurity ions. Consequently, an additional polar binding appears between impurities and matrix atoms, leading to formation of atomic "blocks" with stronger binding. This theory is shown to explain the following properties of α-Fe-W solid solutions: a) a maximum on the concentration dependence of Young's modulus at 0.06 at% W (Fig.1); b) a maximum on the temperature dependence of the internal-friction coefficient at various concentrations of W (Fig.2); c) an electrical resistivity minimum on the concentration dependence (Fig.3); d) a minimum on the concentration dependence of the effective number of electrons (Fig.4). There are 4 figures.

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A Theory of Dilute Solid Solutions

ASSOCIATION: Institut metallurgii im. A.A.Baykova AN SSSR
(Metallurgy Institute imeni A.A.Baykov, AS USSR)

SUBMITTED: February 6, 1960

X

Card 3/3

SOKOLOV, Anatoliy Vyacheslavovich; GUROV, K.P., kand. fiz.-matem. nauk, red.; KRYUCHKOVA, V.N., tekhn. red.

[Optical properties of metals] Opticheskie svoistva metallov. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1961. 464 p. (MIRA 15:1)

(Metals—Optical properties)

MILLER, Yu.G.; GUROV, K.P.

Investigating ion migration under the action of a Hall electric field. Fiz. tver. tela 3 no.9:2870-2872 S '61. (MIRA 14:9)

1. Institut metallurgii imeni A.A. Baykova, Moskva.
(Ions--Migration and velocity)
(Hall effect)

GUROV, K.P.

Theory of diffusion mobility and electric transfer in metals and metallic solid solutions. Fiz. met. i metalloved. 11 no. 4:496-506 Ap '61. (MIRA 14:5)

1. Institut metallurgii im. A.A. Baykova AN SSSR.
(Metals--Electric properties) (Diffusion)

LESNIK, Andrey Gerasimovich; GUROV, K.P., red.; PLAKSHE, L.Yu., tekhn. red.

[Models of interatomic interaction in the statistical theory of alloys] Modeli mezhatomnogo vzaimodeistviia v statisticheskoi teorii splavov. Moskva, Fizmatgiz, 1962. 98 p. (MIRA 15:7)

(Crystal lattices--Models)
(Alloys--Metallography)

ZAYDEL', A.N.; PROKOF'YEV, V.K.; RAYSKIY, S.M.; SHREYDER, Ye.Ya.; GUROV, K.P., red.; KUZNETSOVA, Ye.B., red.; BRUDNO, K.F., tekhn. red.

[Tables of spectral lines]Tablitsy spektral'nykh linii. Izd.2., ispr. i dop. Moskva, Fizmatgiz, 1962. 607 p. (MIRA 16:1)
(Spectrum analysis--Tables, etc.)

S/509/62/000/011/014/019
E071/E351

AUTHOR: Gurov, K.P.

TITLE: Derivation of formulas for the calculation of electrotransfer in metals and dilute solid solutions, from the statistical theory of diffusion mobility of atoms

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Trudy. no. 11. Moscow, 1962. Metallurgiya, metallovedeniye, fiziko-khimicheskiye metody issledovaniya. 186 - 198

TEXT: The object of this work was a detailed analysis of the process of electrotransfer (ion migration), taking into consideration the conditions under which the experiments were usually carried out, and the assessment of possibilities of using the formulas so derived for experimental determination of ionic charges. The derivation of formulas for the density of a flow of ions was made by considering the process of diffusion (and ion migration) as taking place in "diluted gas of vacancies" by the statistical method. However, the formulas derived are applicable only to dilute solid solutions as only in this case is there no correlation between the positions of the ions and components, and

Derivation of ....

definite expressions can therefore be given to the forces acting during the shift of a vacancy from one position to another. Thus, the proposed theory cannot provide formulae for alloys and solid solutions containing comparable contents of components, suitable for use in experiments on ion migration. For dilute solutions such formulas (as a zero approximation) were derived. In these formulas the simultaneous use of radioactive isotopes, both as alloying atoms and as base atoms, was assumed.

43381
S/056/62/043/005/050/058
B125/B104

24.7000

AUTHORS: Gurov, K. P., Leksina, I. Ye., Penkina, N. V.

TITLE: Calculation of the electron characteristics of metals using the data from measurement of their optical constants

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 5 (11), 1962, 1957-1963

TEXT: A method is proposed for calculating the "microproperties" (mean velocity on the Fermi surface, effective mass of the electrons, electron-phonon collision frequencies) of metals caused by electrons using the measurements of the refractive indices and of the absorption coefficients of pure metals. It is assumed that the excitation of the electron system of metals during heat absorption, thermal conduction, electric conduction, excitation by radiation etc. can be described in approximation of the isotropic effective mass. From theoretical calculations of the electron structures

$$v_F = \sqrt{3N_{эфф}/mg(E_F)} = 10^{-14}\sqrt{N_{эфф}/3g(E_F)} \qquad (11)$$

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Calculation of the electron ...

is obtained for the velocity on the Fermi surface. $N_{eff} = g(E_F)mv_F^2/3$ is the effective electron number per unit volume. Considering that $E = mv^2/2$, the effective mass is given by $m^* = \pi\sqrt[3]{\hbar^3 g(E_F)v_F} = 6.16\cdot10^{-27}\sqrt[3]{N_{eff}/v_F^3}$. If n bands contribute to these effects, then also the weighted mean microcharacteristics must be introduced. The weighted mean square velocity on the Fermi surface is

$$\overline{v_F^2} = \sum_{i=1}^{n} g_i(E_{iF})v_{iF}^2 \Big/ \sum_{i=1}^{n} g_i(E_{iF}) = \sum_{i=1}^{n} g_i(E_{iF})\, v_{iF}^2 / g(E_F), \qquad (16),$$

where $g(E_f)$ is the total density of states on the Fermi surface. Further, $N_{eff} = g(E_F)mv_F^2/3$ holds (17). The average effective mass is $\bar{m}^* = 6.16\cdot10^{-27}\,(N_{eff}/\bar{v}_F^3)^{1/2}$. The collision frequency is

$$\nu_{el} = \frac{9.0\pi^3\alpha^2 T\Theta^2(E_F)^2}{Mu^4}\left\{1+\frac{1}{24}\left(\frac{\Theta}{T}\right)^2\right\}. \qquad (36),$$

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S/056/62/043/005/050/058
B125/B104

Calculation of the electron ...

where $\bar{E}_F = \bar{m}^* v_F^2/2$. Θ is the Debye temperature, u the velocity of sound, $\alpha = m^*/m$. The microcharacteristics of α-Fe, Pd, Al, and Cu were calculated by means of N_{eff}, which was determined from the metal-optical data by using already published data. With Pd and Fe the d-sub-bands contribute greatly to the effect investigated. The large effective masses of the quasiparticles that correspond to these sub-bands prevail in the weighted mean values found. Results determined from the specific heats agree well with those calculated by the above method. A main advantage of this method of estimating is that the microcharacteristics of different metals can be compared. There is 1 table.

ASSOCIATION: Institut Metallurgii im. A. A. Baykova (Institute of Metallurgy imeni A. A. Baykov)

SUBMITTED: June 25, 1961

Card 3/3

GUROV, K.P.

Evaluating the additional binding energy in diluted solid solutions.
Trudy Inst. met. no.15:54-57 '63. (MIRA 16:9)
(Solutions, Solid) (Fermi surfaces)

GUROV, K.P.; LEKSINA, I.Ye.; PENKINA, N.V.

Calculation of electron characteristics of metals. Trudy Inst. met. no.15:65-74 '63. (MIRA 16:9)
(Metal crystals) (Electrons)

ACCESSION NR: AP4034047 S/0126/64/017/004/0500/0504

AUTHORS: Gurov, K. P.; Pekarev, A. I.

TITLE: The influence of impurities on the thermionic emission of tungsten

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 4, 1964, 500-504

TOPIC TAGS: tungsten, thermionic emission, work function, conduction band, hafnium, tantalum

ABSTRACT: An equation is derived describing the effect of impurities on the work function of tungsten. The change in the work function is given by $\Delta\varphi = \Delta E_0 - \Delta E_F$. The change in E_0, the energy of the bottom of the conduction band in the absolute energy scale, is due to the additional potential energy of the impurity ions. This is caused by the excess charge Z (either positive or negative) of the impurity ion compared to that of the tungsten ion and is a short range effect because of screening by the conduction electrons. The change in E_F, the energy of the Fermi level measured from the bottom of the conduction band, is due to the change in the number of electrons in the system. The relative atomic concentration c of the impurity is assumed small enough so that there is essentially no interaction

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ACCESSION NR: AP4034047

between impurity ions. In the approximation of nearly free electrons, the distribution of electrons is assumed uniform. Then $\Delta E_0 = -\frac{Zc}{n_A(E_F)}$, where $n_A(E_F)$ is the density of states per atom per ev in the conduction band about the Fermi level. Also $\Delta E_F = \frac{Zc}{n_{AF}(E_F)}$, where $n_{AF}(E_F)$ is the total density of levels at the Fermi level. For tungsten $n_{AF}(E_F)$ is about three times as large as $n_A(E_F)$ = 0.27 states/ev. With one atomic % of Hf in W (c=0.01, Z=2) $\Delta\varphi \approx -0.07$ ev. According to experimental data the work function is decreased by 0.1 ev, as it is for Ta in W $\Delta\phi \approx -0.04$ ev. Orig. art. has: 16 equations and 2 diagrams.

ASSOCIATION: Institut metallurgii im. A. A. Baykova AN SSSR (Institute of Metallurgy AN SSSR)

SUBMITTED: 19Apr63 DATE ACQ: 20May64 ENCL: 00

SUB CODE: SS NO REF SOV: 003 OTHER: 005

Card 2/2

ACCESSION NR: AP4037577 S/0056/64/046/005/1641/1647

AUTHOR: Gurov, K. P.

TITLE: Relaxation time in a two-temperature mixture of classical gases

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1641-1647

TOPIC TAGS: gas mixture, gas kinetic theory, relaxation time, gas temperature, particle distribution

ABSTRACT: A new method is proposed for the derivation of the relaxation equation for classical systems consisting of two species of neutral particles which differ only in mass, in which each subsystem (species of particles) has a quasi-equilibrium Maxwellian distribution with its own modulus (temperature). An initial mathematical transformation first proposed by T. Kihara (J. Phys. Soc. Japan) is used and the expression obtained, unlike that of E. A. Deslog (Phys.

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ACCESSION NR: AP4037577

Fluids, v. 5, 1223, 1962) agrees with the expression of L. D. Landau (ZhETF v. 7, 203, 1937). An inaccuracy contained in the original paper by Kihara is corrected. An approximate estimate is given for the relaxation time of a two-temperature mixture of classical gases. "The author is grateful to V. P. Silin for a discussion of the work and for remarks." Orig. art. has: 27 formulas.

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy)

SUBMITTED: 05Jul63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: ME, TD NR REF SOV: 003 OTHER: 004

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GUROV, K.P.; CHUBINOV, M.G.

A correlation effect in the diffusion process in metals.
Fiz.met.i metalloved. 20 no.2:179-182 Ag '65. (MIRA 18:9)

1. Institut metallurgii imeni A.A.Baykova AN SSSR, Moskva.

UR/

ACC NR: AM6033863 Monograph

Gurov, Kirill Petrovich

Fundamentals of kinetic theory; N. N. Bogolyubov's method (Osnovaniya kineticheskoy teorii; metod N. N. Bogolyubova) Moscow, Izd-vo "Nauka", 1966, 351 p. illus., biblio. 7000 copies printed.

TOPIC TAGS: kinetic theory, gas kinetics, Boltzmann equation/Bogolyubov method

PURPOSE AND COVERAGE: This book is intended for scientific workers, and may be also used by fellows and students in advanced courses of institutes of higher education who are specializing in the field of theoretical physics, thermophysics, solid state physics, and the physics of metals. The book discusses the general kinetic theory of gas systems (ideal gases, electron gas in metals, etc.). There is a detailed report on the kinetic equations of the method of Academician N. N. Bogolyubov, an analysis of these equations is given, and methods for solving them are presented. A method is described for determining a particular type of kinetic coefficient (viscosity, heat conductivity, etc.). There is a detailed presentation of the mathematical apparatus of the theory of quanta systems. Finally, concrete problems of metal optics and atomic diffusion in metals and alloys are examined. There are 259 references, 90 of which are Soviet.

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UDC: 530.10

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ACC NR: AM6033863

SUB CODE: 20/ SUBM DATE: 28May66/ ORIG REF: 085/ OTH REF: 174/

Card 2/2

GUROV, L.

The IUT machine tool and its economics. Izobr.i rats. no.6:[illegible]
Je '60. (MIRA 14:2)

1. Spetsial'nyy korrespondent zhurnala "Izobretatel' i rationalizator", G.Kalinin.
(Machine tools—Technological innovations)

UBIYKO, A.M., inzh.; GUROV, M.A., inzh.; TSINGARELLI, Ye.I., inzh.

Emission of nitrogen oxides in the operation of high-voltage switching apparatus with tight casing. Energ. i elektrotekh. prom. no.3:64-67 Jl-S '64. (MIRA 17:11)

GUNCHEVA, T. Dimitrova, asistent; GUROV. Mikho, st. agronom

Hop. Prir i znanie 14 no.6:3-5 Je '61.

1. Upravlenie durzhavni zemedelski stopanstva.

GUROV, N.G., gvardii podpolkovnik, voyennyy letchik pervogo klassa.

Fidelity to the cause you serve. Vest. Vozd. Fl. 41 no. 7:11-15 Jl '58. (MIRA 11:7)
(Aeronautics--Study and teaching)

GUROV, P.

Rubles in heaps. Sov. shakht. 12 no.6:17 Je '63. (MIRA 16:9)

1. Glavnyy bukhgalter tresta Kopeyskugol'.
(Mine timbering--Costs) (Wood)

1. GUROV, P.

2. USSR (600)

4. Cream Separators

7. Resistance to wear of the helical gear on a cream separator, Moloch.prom. 14 no. 5, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

GUROV, P.

Create permanent staffs for grain procurement stations and for construction work. Muk.-elev. prom. 23 no.6:9-10 Je '57.
(MLRA 10:9)

1. Ministerstvo khleboproduktov Kazakhskoy SSR.
(Grain trade)

OLEYNIKOV, T.; GUROV, P.

Young specialists leave for work in Kazakhstan. Muk.-elev. prom. 25 no.4:3-4 Ap '59. (MIRA 13:1)

1.Direktor Odesskogo mukomol'no-krupyanogo tekhnikuma (for Oleynikov) Ministerstvo khleboproduktov Kazakhskoy SSR (for Gurov).
(Kazakhstan--Grain elevators)

GUROV, P.

Rentability and quality. Sov.shakht. 10 no.5:8 My '61. (MIRA 14:9)

1. Glavnyy bukhgalter tresta Kopeyskugol', Chelyabinskoy oblasti.
(Chelyabinsk Basin--Coal mines and mining)

BUROV, N., inzh.; GUROV, P., inzh.

New suggestions concerning the utilization of agricultural machinery in rural construction. Sel'. stroi. 16 no.10:1-6 O '61. (MIRA 14:11)

(Building machinery)

GUROV, P., inzh.

New machinery and equipment. Na stroi. Ros. 4 no.5:2 of cover My '63. (MIRA 16:5)
(Earthwork--Equipment and supplies)

KHOMYAKOV, K.G.; STIKHOVNIN, A.M.; MEMIROVSKIY, E.I.; GUROV, P.G.

Branch conferences of production activists of the Main Administrations of the Ministry. Stroi.i dor.mashinostr. no.9:37-38 S '56. (MLRA 9:11)

(Machinery industry--Congresses)

GUROV, P.G.

Equipment used in forming multi-hollow reinforced concrete floors.
Stroi. i dor. mashinostr. 2 no.5:21-22 My '57. (MLRA 10:6)
(Concrete, Reinforced) (Road machinery)

GUROV, P.G.

CHERDAK, M.G.; STIKHOVNIN, A.M.; NEMIROVSKIY, E.I.; GUROV, P.G.

Conference of managerial personnel of the main departments of the Ministry. Stroi. i dor. mashinostr. 2 no.5:36-38 My '57. (MLRA 10:6)
(Road machinery)

GUROV, P.G.

GUROV, P.G.

Machinery for removing the pins from prestressed reinforced concrete products. Stroi. i dor. mashinostr. 2 no.11:27-31 N '57. (MIRA 11:1)
(Prestressed concrete)

GUROV, P.G.

The SM-607 machine for winding reinforcing wires. Stroi. i dor. mashinostr. 2 no.12:21-23 D '57. (MIRA 11:2)
(Reinforced concrete)

L 36380-66 EWP(k)/EWT(m)/EWP(t)/ETI IJP(c)

ACC NR: AP6009864 SOURCE CODE: UR/0413/66/000/004/0058/0058

INVENTOR: Reykhert, K. N.; Andreyev, A. D.; Gurov, P. G.

ORG: none

TITLE: Device for ingot cooling with an air-water mixture in continuous casting of aluminum alloys. Class 31, No. 178950

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 4, 1966, 58

TOPIC TAGS: ~~cooling~~, ingot cooling, ~~continuous~~ metal casting, metalworking machinery

ABSTRACT: An Author Certificate has been issued describing a device for cooling ingots with an air-water mixture; the device consists of two chambers for air and water. To improve the quality of castings, the device is equipped with rings, which are screwed on the bottom of the crystallizer, and adjustable slots for supplying and mixing water and air as well as a slot for feeding the air-water mixture onto the ingot (See Fig. 1). [LD]

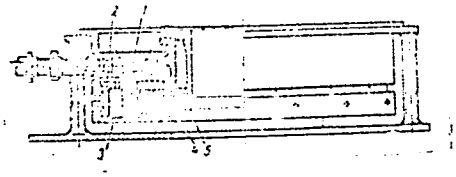

Fig. 1. Device for cooling ingots during continuous casting of aluminum alloys

1 - crystallizer chasis; 2 and 3 - rings; 4 - slots for feeding and mixing water and air; 5 - slot for feeding the air-water mixture.

Card 1/2 UDC: 621.746.27—717

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ACC NR: AP6009864

SUB CODE: 13,11/ SUBM DATE: 24Sep62

Card 2/2

GUROV, P. I.

GUROV, P. I. -- "Investigation of the Resistance to Wear of Worn Gear Teeth in Milk Separators." Sub 26 Mar 52, Moscow Inst of Mechanization and Electrification of Agriculature, Imeni V. M. Molotov (Dissertation for the Degree of Candidate in Technical Sciences)

SO: Vechernaya Moskva, January-December 1952

GUROV, P.I.

Surgical and biological method of treating skin paronychia.
Zdrav. kazakh. 22 no.1:70-71 '62. (MIRA 15:3)

1. Iz Temir-Tauskoy gorodskoy bol'nitsy No.4.
(FELON (DISEASE))

GUROV, P.I.

Comparative evaluation of the methods of surgical treatment and drainage of wounds in paronychia. Zdrav.Kazakh. 22 no.11: 21-25 '62. (MIRA 16:2)

1. Iz bol'nitsy No.4 g. Temir-Tau. Nauchnyy rukovoditel' temy - dotsent N.V. Ionov.
(FINGERS--DISEASES) (DRAINAGE, SURGICAL)

GUROV, P.I. (g. Temir-Tau); IL'DEBAYEV, A.I. (g. Temir-Tau)

Combined injury of the chest, retroperitoneal space, pelvis and hip. Vest. khir. 93 no.12:104-105 D '64. (MIRA 18:5)

CHOLAKOV, Iordan; GUROV, Rusi; ILIEV, Nikola

Contribution to the problem of economy in leather, fur and shoe industries: first report, technical and economic characteristics, economic relations and basic stages in the development of the Bulgarian leather, fur and shoe industries. Godishnik khim tekh 6 no.1:97-118 '59 (Publ. '60)

CHOLAKOV, I.; GUROV, R.; ILIEV, N.

Economic problems in the leather, fur, and shoe industries.
Godishnik khim tekh 8 no.1:35-53 '61 [publ. '62].

CHOLAKOV, I.; GUROV, R.; ILIEV, N.

Economy of the leather, fur, and shoe industries. Pt. 3.
Godishnik khim tekh 8 no.2:175-194 '61 [publ. '62].

DIMITROV, M.; GUROV, R.; GAZENOV, St.

Economic expedience of organizing the production of Bulgarian-made catalysts for the manufacture of synthetic ammonia. Khim i industriia 36 no.10: 385-388 '64.

ISAYEV, Aleksandr Sergeyevich; GUROV, S., red.; KUZNETSOVA, A., tekhn. red.

[From automotive carriage to the ZIL-111 automobile; from the history of automobile engineering]Ot samobegloi koliaski do ZIL-111; iz istorii avtomobilia. Moskva, Mosk. rabochii, 1961. 167 p. (MIRA 15:9)
(Motor vehicles)

SHARKOV, Sergey Nikolayevich, nagrazhden medal'yu "Za trudovyy doblest"; GUROV, S., red.; SHLYK, M., tekhn. red.

[In six hours instead of seven] Vmesto semi chasov - za shest'. Moskva, Mosk. rabochiy, 1962. 33 p. (MIRA 15:7)

1. Brigadir pressovshchikov-vulkanizatorshchikov zavoda "Krasnyy bogatyr" (for Sharkov).
(Moscow--Rubber industry) (Socialist competition)